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Double Trephining.

(ACQUIRED SPASTIC HEMIPLEGIA — PORENCEPHALUS.)

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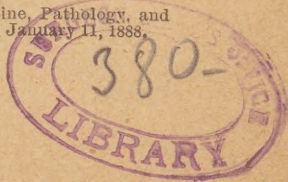


A CASE OF CEREBRAL LOCALIZATION, WITH
DOUBLE TREPHINING (ACQUIRED SPASTIC
HEMIPLEGIA — PORENCEPHALUS).¹

BY W. N. BULLARD, M.D.

GENTLEMEN: The case which I have the honor to report to you to-night derives its chief medical interest from the fact that the diagnosis of the lesion, and the localization of its seat were correctly made during the life of the patient, and that the latter was such as could be easily reached by a comparatively simple operation. Cases of operative interference in congenital cerebral lesions, or in those occurring in the earlier months of life, are very rare, and I, therefore, believe it of importance that the possibility of localizing these lesions, and the probability that in certain cases, even though they be incapable of cure, their results can be mitigated, should be strongly emphasized. Until of late years, but little attention has been paid to the various forms of congenital or infantile cerebral lesions, excluding hydrocephalus and inflammations of the meninges. Patients suffering from congenital or infantile cerebral paralyses are too often considered not only absolutely incurable, but incapable, even, of improvement. Some cases unquestionably are so; but, on the other hand, I believe that in many of this class of cases we can do much to improve and mitigate those symptoms which we cannot remove, and there is no doubt that a broad field lies open here for cerebral surgery, provided, only, that the neurologist can state with some degree of preci-

¹ Read before the Section for Clinical Medicine, Pathology, and Hygiene of the Suffolk District Medical Society, January 11, 1888.



sion the condition existing within the cranium, and, if the lesion be a localized one, point out its seat.

The present case occurred in the service of Dr. Bradford, at the Children's Hospital, and it is through his kindness and at his suggestion that I bring it before you to-night.

The patient was a boy, four and a half years old. There was no history of any nervous disease in the family, and no history of the patient was obtainable, except that he was supposed to have been in his present condition since birth. The delivery was by forceps, and the child had a scar and depression over the right parietal bone, supposed to have been caused by them. There was no history of convulsions at any time. The child was brought to the Hospital by his parents, who insisted upon an operation — trephining over the depression — although they were informed that there was little hope of improvement from what they desired, and still less of cure. This operation had been decided upon before I saw the child.

I first saw the patient in the Hospital on the 22d of June, 1887, when his condition was as follows:

The child was seated in bed. As a rule, he sits quietly all day, doing nothing. Expression vacant. Intelligence limited, although he has a certain sense of his surroundings, as was shown by his screaming one day when he was placed in a bed in another part of the ward, and pointing with his finger to the old one, and continuing this until he was replaced. He understands simple words and sentences, and obeys simple directions. He signifies when he is thirsty. When told to do so, he will turn his head, and he will hand an object to a person, or smell of a rose, when it is suggested to him. He can say "yes" and "no," and will say "good-bye" when any one is going away, but he cannot talk. He drules constantly.

Physical condition: Well nourished, well developed. Head large, rather square. On the right side, 5 cm. behind, and about 4 cm. above the upper edge of the anterior border of the pinna, there is a scar 5 cm. long, extending forwards and slightly upwards. This scar lies in front of the occipito-parietal depression, which is alike on both sides, and seems to cross the temporal ridge of the parietal bone, and the squamo-parietal suture. On palpation, there is an irregular knob or prominence under one portion of the scar, and a depression with irregularities on each side, that is, anteriorly and posteriorly. There is no decided tenderness here or elsewhere about the head. Nothing else abnormal was detected about the cranium.

All the special senses appear normal. There is right internal strabismus. Eyes not examined ophthalmoscopically.

Nothing abnormal could be detected about the trunk or organs of the thoracic or abdominal cavities. There was an occasional reduplication of the first sound of the heart.

The spine was straight; no tenderness in the back. The patient cannot use any of his extremities, but he uses those on the left much better than those on the right.

Upper extremities: The right upper extremity can be moved somewhat, but is never used. It is in a condition of spastic paralysis. The forearm is held semi-flexed upon the arm, and there is considerable resistance to passive motion, which can, however, be overcome after a time. The hand is firmly flexed on the forearm. He will not grasp anything with the right hand. He moves the left upper extremity much better than the right, and always grasps objects with the left hand, and then holds them firmly.

Lower extremities: The right lower extremity is

smaller, and possibly colder than the left. There is a spastic condition of the knee and ankle. The foot is held flexed in the equinus position, with the toes pointing downwards. Some movement of the limb, however, is possible. He can flex at the thigh, knee, and ankle when he wishes. The left lower extremity is somewhat weak, perhaps from disuse: otherwise, nearly normal.

Knee-jerk exaggerated on both sides. Patient is unable to walk or to stand without support. He can take a step if supported under the arms, and he can hold his weight on the left leg. If the legs become locked at the knees, as they tend to do, he can support a portion of the weight of his body upon them. The sensation is apparently normal everywhere throughout the body. Nothing else abnormal detected.

To resume the case in short, we have here a boy, four and a half years old, with much diminished intelligence, inability to speak, inability to use any of his limbs well, and with right internal strabismus and right spastic hemiplegia. In addition, there is a well-marked cicatrix and depression in the right posterior parietal region.

After examination of the case, it was decided, at my suggestion, that in addition to the operation already proposed, the cranium should be opened over the cortical motor area of the left side, as this seemed to offer the strongest prospects of relief.

The operation was, accordingly, performed on the 27th of June, by Dr. Bradford. The patient being etherized, the various points were localized on the shaven head, and the position of the fissures of Rolando determined as carefully as possible. Dr. Bradford trephined first on the right side of the head, directly over the cicatrix. A curved incision with its convexity downwards, about six inches in length, was

made through the scalp, the periosteum was removed intact, and the cranium trephined—the trephine used being an inch in diameter. The outer table of the portion of bone removed showed a fracture, and the inner a slight inequality, due to a fissure. The dura mater exposed was thickened, and its vessels filled with blood. It (the dura mater) was then incised, and the brain and pia exposed to view. There was no evidence of pressure, nor of anything abnormal here below the dura. The brain protruded slightly through the opening and pulsated. [It is important to note here the fact that, in spite of the fracture of the cranium, and the accompanying thickening of the dura mater, the pia and brain were, as far as could be told, absolutely normal.]

It was now decided that it would be wise to trephine over the probable seat of the lesion on the left side, and, at Dr. Bradford's request, I located the motor area on the left side, where it was presumable, from the symptoms, that the lesion would be found. This point was a little higher and slightly further forward than that trephined on the right, at the junction, as nearly as could be determined, of the middle and lower thirds of the fissure of Rolando. There was a very small superficial cicatrix in the skin here, not involving the deeper tissues of the scalp, and which had remained undetected until the position was marked. An incision similar to that made on the right side was now made here. The cranium, when uncovered, appeared perfectly normal. It was trephined, and, on the removal of the bone to which the dura was attached, a depression in the brain substance — porencephalic cavity — was exposed. This not only occupied the whole space directly under the opening, but also extended somewhat anteriorly. The pia seemed to be adherent. The brain substance in this depression,

which was estimated as about $1\frac{1}{2}$ inches long, by $\frac{3}{4}$ inch wide and $\frac{3}{8}$ inch deep at the deepest part, was puckered and shrivelled. Considerable hæmorrhage from the bone followed the removal of the button on this side. This was quickly controlled by plugging.

As the patient's condition was poor — pulse very weak, and respiration slow and labored — nothing further was attempted. After replacing the buttons of bone on each side, and stitching the dura mater on the right, the incisions were sewed up, and bandages and dressing applied.

The patient, however, never rallied thoroughly after the operation, although he recovered consciousness in the evening, and was conscious until the following morning, when he died at 10 A. M., about seventeen hours after the operation. The temperature was not taken on the evening following the operation, but, the next morning, rose to 105° . There was no autopsy.

This case, it seems to me, illustrates some interesting points. In the first place, it demonstrates the possibility of localizing lesions of this character (porencephalic) in children in certain cases. This is, of course, the first step in any rational attempt for their direct alleviation or cure. That these lesions can be localized with moderate accuracy, at least, sufficiently for all practical purposes in a large proportion of the cases of this class, I am convinced, and I believe it to be the duty of the neurologist, so far as lies within his power, to improve and perfect his knowledge, so that, when appealed to by the surgeon, he shall be able to point out where the instrument should be directed, and to state what sort of lesion is likely to be found.

Secondly, I believe that this case may be accepted as evidence that these lesions — many of them, at least — can be reached by surgical interference without serious difficulty, since simple trephining can no

longer be regarded as a serious operation in ordinarily healthy persons. If this be true, its importance is at once manifest. If these lesions can be localized, and if surgical interference in them is not a matter of serious difficulty, nor of marked risk to the life of the patient, we have here, at least, one expedient which offers a prospect of alleviation in these cases, however remote.

It is well known to most of us, but I repeat it here for the sake of emphasizing it again, that there are no cases which, as a class, are regarded by the whole medical profession as more utterly hopeless and as more entirely beyond any possible medical aid and assistance than congenital and infantile brain affections. There is no class of cases in which the patients are more utterly useless to themselves and to the world, or more of a burden to their parents and relatives. Anything, therefore, which affords the least prospect of relief is, in them, of the utmost importance.

There are two other points in this case which are of both neurological and surgical value, which I will refer to in short.

The first is the question of the advisability of trephining in more than one place at the same time in children. Whether, in this case, the result might have been more favorable had the operations been performed separately, it is impossible to decide; but, in a similar case, it would certainly seem more safe to perform two operations.

The second point is one which, although theoretically well known, cannot be repeated too often, and it is well illustrated here. This is, that in spite of a fracture or visible injury on one side, the actual cerebral lesion may be upon the opposite, whether produced by direct violence or by *contrecoup*. Therefore, in case of cerebral injury, if the symptoms point

to a lesion on the opposite side from the trauma; for example, if the hemiplegia is on the same side of the body as the fracture of the cranium, we should not trephine at the place of fracture, but on the other side.

In the case of our patient, the probability is that the whole trouble was traumatic, and due to the pressure of forceps. While on the right the parietal bone was fractured, on the left, the bone being more yielding, or the blade being in a slightly different position, or for some other reason, a different effect was produced. This was probably the rupture of the ascending parietal artery or one of its branches.

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